

## **DISEASE AND NONBATTLE INJURY**

A DNBI casualty can be defined as a military person who is lost to an organization by reason of disease or injury, and who is not a battle casualty.

Historically, in every conflict the US has been involved in, only 20 percent of all hospital admissions have been from combat injuries. The other 80 percent have been from DNBI.

## **THE MEDICAL THREAT AND PRINCIPLES OF PREVENTIVE MEDICINE MEASURES**

The medical threat is.

- . Heat.
- . Cold.
- . Arthropods and other animals.
- . Food- and waterborne diseases.
- . Toxic industrial chemicals/materials.
- . Noise.
- . Nonbattle injury.
- . The unfit service member.

## **PRINCIPLES OF PREVENTIVE MEDICINE MEASURES**

- . Service members perform individual techniques of PMM.
- . Chain of command plans for and enforces PMM.
- . Field sanitation teams train service members in PMM and advise the commander and unit leaders on implementation of unit-level PMM.

## **INDIVIDUAL PREVENTIVE MEDICINE MEASURES**

### **HEAT INJURIES**

**ACCLIMATIZATION-** Significant heat acclimatization requires at least 3 to 5 days and full acclimatization can take up to 2 weeks.

**DRINK PLENTY OF WATER-** Depending on the heat and activity level, you may need to drink from  $\frac{1}{2}$  to  $1\frac{1}{4}$  quarts of water per hour. *3 gallons/12 liters per day in hot, dry climates. Drinking water is a must in order to prevent heat injury.*

**USE WORK/REST CYCLES-** Work and rest as your leader directs. A rest period helps prevent dangerous increases in body temperatures by minimizing heat production.

**EAT ALL MEALS TO REPLACE SALTS-** Eating all meals in the field will usually provide the body's requirements for salts. Field rations/MRE meet the daily requirements for minerals and electrolytes (sodium).

**MODIFY YOUR UNIFORM-** When directed/authorized by your commander to reduce heat stress and to protect against ultraviolet (UV) radiation.

### **COLD INJURIES**

#### **WEAR UNIFORM PROPERLY**

- . Wear the clothing your commander and leaders direct.
- . Wear clothing in loose layers (top and bottom). Avoid tight clothing, including tight underwear.
- . Keep clothing clean and dry. Remove or loosen excess clothing when working or in heated areas to prevent sweating.
- . Wear headgear to prevent body heat loss. The body loses large amounts of heat through the head.
- . Change wet/damp clothes as soon as possible.

## **KEEP YOUR BODY WARM**

Keep moving, if possible.

- . Exercise your big muscles (arms, shoulders, trunk, and legs) frequently to keep warm.
- . If you must remain in a small area, exercise your toes, feet, fingers, and hands.
- . Avoid the use of alcohol as it makes your body lose heat faster.
- . Avoid standing directly on cold, wet ground, when possible.
- . Avoid tobacco products. The use of tobacco products decreases blood flow to your skin.
- . Eat all meals to maintain energy.
- . Drink plenty of water and/or warm nonalcoholic fluids.
- . Buddies should monitor each other for cold weather injury.

**NOTE:** Dark yellow urine means you are not drinking enough fluids! You can dehydrate in cold climates too!

## **PROTECT YOUR FEET**

- . Bring several pairs of issue boot socks with you.
- . Keep socks clean and dry. Change wet or damp socks as soon as possible. Socks can become wet from sweating.
- . Apply foot powder on feet and in boots when changing socks.
- . Wash your feet daily, if possible.
- . Avoid tight socks and boots (completely lace boots up as loosely as possible).
- . Wear overshoes to keep boots dry.

## **PROTECT YOUR HANDS**

- . Wear gloves with inserts, or mittens with inserts.
- . Warm hands under clothing if they become numb.
- . Avoid skin contact with snow, fuel, or bare metal.
- . Waterproof gloves by treating with waterproofing compounds, such as snow seal.

## **PROTECT YOUR FACE AND EARS**

- . Cover your face and ears with a scarf or other material, if available.
- . Wear your insulated cap with flaps down or wear a balaclava and secure under your chin.
- . Warm your face and ears by covering them with your hands. **Do not rub face** and ears.
- . Do not use face camouflage when windchill is -10° F or below; prevents detection of cold weather injury (frostbite).

## **PROTECT YOUR EYES**

- . Wear sunglasses (or goggles) Wear Spectacles, Protective, Laser-Ballistic, or Special Protective Eyewear, Cylindrical System.

## **PROTECT YOUR BUDDY**

- . Watch for signs of frostbite on the service member's exposed skin. The affected skin will appear as pale/gray/waxy areas.

## ARTHROPODS AND OTHER ANIMALS OF MEDICAL IMPORTANCE

Poor sanitation and improper waste disposal under wartime conditions greatly increase the disease vector potential of such common pests as filth flies and rodents.

### USE THE DEPARTMENT OF DEFENSE INSECT/ARTHROPOD REPELLENTS

The concurrent use of a skin insect repellent (N, N-diethyl-M-toluamide [DEET]) and a clothing insect repellent (Permethrin) is necessary to obtain maximum protection against insects/arthropods.

#### **When the arthropod threat is high:**

- . Blouse pants in boots and completely lace boots.
- . Tuck undershirt in at waist.
- . Wear sleeves down.
- . Button blouse/shirt at the neck and wrist.
- . Do not use aftershave lotion, cologne, or perfumed deodorants or soaps in the field; they attract arthropods.
- . Wear headgear (cap, helmet, arthropod head net) when necessary to protect your head.

### KEEP YOUR BODY AND UNIFORM CLEAN

- . Bathe every day if possible, or at least once a week. Good personal hygiene practices reduce infestation of insects such as body lice and mites.
- . Wash your uniform frequently (a minimum of every 7 days) to remove arthropods and their eggs which may be attached to the uniform.

### FOLLOW MEDICAL ADVICE

- . Take medications that help prevent diseases (such as anti-malaria pills) when directed by your commander.
- . Use medications, such as cream/shampoo, when prescribed by medical personnel for treatment of lice, chiggers, poison ivy, and so forth.

### PROTECT YOURSELF FROM OTHER MEDICALLY IMPORTANT ARTHROPODS AND ANIMALS (Spiders, Scorpions, Centipedes and Snakes)

- . Shake out and inspect clothing, shoes, and bedding before use.
- . Eliminate collections of papers, unused boxes, scrap lumber, and metal.
- . Do not handle, play with, or disturb snakes or other wildlife.

### DOMESTIC AND WILD ANIMALS OR BIRDS

- . **Do not** handle or approach so-called "pets"
- . **Do not** collect or support (feed or shelter) stray or domestic animals/birds in the unit area, unless cleared by veterinary personnel.

## FOOD-/WATER-/WASTEBORNE DISEASE/ILLNESS

- . Only eat and drink food and water from U.S. approved sources.
- . Do not buy foods, drinks, or ice from civilian vendors unless approved by veterinary personnel or PVNTMED personnel.
- . Do not eat or drink local (unapproved) ice, snow cones, open drinks with ice, or similar products; such food can cause foodborne illness/disease.

## **WASH YOUR HANDS**

Use soap and drinking (potable) water.

- . After using the latrine.
- . Before touching eating utensils or food.
- . After eating.
- . After handling any item that can potentially transfer germs.
- . Frequently during the work day to keep your hands free of germs.

## **PERSONAL HYGIENE AND PHYSICAL AND MENTAL FITNESS**

### **KEEP PHYSICALLY FIT**

- . Physically fit service members are less likely to get sick or injured.

### **PREVENT SKIN INFECTIONS**

Bathe frequently; if showers or baths are not available, use a washcloth daily to wash.

- . Your genital area.
- . Your armpits.
- . Your feet.
- . Other areas where you sweat or that become wet, such as between thighs, (or for females, under the breasts) and between buttocks.

Keep skin dry.

- . Use foot powder on your feet, especially if you have had fungal infections on your feet in the past.
- . Use talcum powder in areas where wetness is a problem (such as between the thighs, and for females, under the breasts).

Wear proper clothing.

- . Wear loose fitting uniforms; they allow for better ventilation. Tight fitting uniforms reduce blood circulation and ventilation.
- . Do not wear nylon or silk-type undergarments in hot or humid environments.

### **PREPARE FOR THE FIELD**

- . All service members need to bring toilet articles such as soap, shampoo, washcloths, towels, toothbrush, dental floss and fluoride toothpaste, and talcum powder and foot powder, with them. **Do not share these items** to prevent the spreading of infections.

- . Males need a razor and blades. Females need sanitary napkins or tampons.

*Remember, during a deployment, you may not be able to easily obtain these items if you run out; bring at least a 2-month supply.*

### **PREVENT DENTAL DISEASE**

- . Brush teeth and gums after meals, or at least once a day. Use fluoride toothpaste.
- . Use dental floss at least once a day.

### **PREVENT GENITAL AND URINARY TRACT INFECTIONS**

For males:

- . Wash the head of your penis when washing your genitals. If uncircumcised, pull the foreskin back before washing.
- . Protect yourself from sexually transmitted diseases (STD). Avoid sexual contact or use a condom; condoms reduce the chance of STD transmission.

For females:

- . Wash your genital area daily.
- . Do not use perfumed soaps or feminine deodorants in the field; they cause irritation and attract arthropods.
- . Protect yourself from STD. Avoid sexual contact, or at least insist that your sex partner uses a condom. condoms help prevent STD transmission.
- . **DO NOT** douche unless directed by medical personnel.
- . **DO NOT** wear nylon or silk undergarments; cotton undergarments are more absorbent and allow the skin to dry.

## NOISE

### **PROTECT YOURSELF AND YOUR MISSION FROM NOISE**

- . Wear properly fitted earplugs. Different types include single flange, triple flange, and hand formed.
- . Keep earplugs and earmuffs clean to prevent ear infections.
- . Avoid noise or limit time around noise to only critical tasks.

## TOXIC INDUSTRIAL CHEMICALS/MATERIALS

### **RECOGNIZE AND PREPARE FOR TOXIC INDUSTRIAL CHEMICALS/ MATERIAL THREATS**

Occupational Hazards.

- . Exhaust from engines and fuel space heaters.
- . Gases from weapons firing, such as rockets and M8 smoke.
- . Solvents used to clean weapons.
- . Greases and oil from vehicle maintenance repair.
- . Detergents used to clean equipment.

Industrial Hazards.

- . Compressed gases.
- . Industrial solvents.
- . Hazardous chemical waste.
- . Materials used at water treatment plants.
- . Materials and water used at waste sewage and water treatment plants.

Biological/radiological Hazards.

- . Medical waste.
- . Materials used at medical research facilities.
- . Radioactive isotopes.
- . Substances at nuclear power plants.
- . Depleted uranium.

### **RECOGNIZE THE INJURY**

- . Carbon monoxide is colorless, odorless, and tasteless. It causes headache, sleepiness, coma, and death.
- . Hydrogen chloride is a very irritating gas that reacts with water (body fluids) to produce hydrochloric acid in the throat, lungs, and eyes. It causes coughing, tissue acid burns, and flu-like lung disease.
- . M8 smoke is a very irritating gas. It can cause severe coughing, wheezing, and

lung damage, if inhaled.

- . Bore/gun gases cause the same effects as carbon monoxide and hydrogen chloride.
- . Solvents, greases, and oils cause skin rashes, burns, drying, and infections. They cause damage to the liver, blood, and brain. Also, many are poisons that may cause cancer.
- . Medical waste causes disease.
- . Radioactive materials cause radiation illness.

## **PROTECT YOURSELF AND YOUR MISSION FROM TOXIC INDUSTRIAL CHEMICALS/ MATERIALS**

**NOTE:** Service members should always be aware that material safety data sheets (MSDS) accompany stores of toxic chemicals when units are deployed, and they serve as an immediate reference in cases of exposure or injury. These MSDS should be kept as part of the unit's SOP when handling the specified chemicals/materials.

### Carbon monoxide.

- . Run engines outdoors or with shop doors/windows open.
- . Keep sleeping area windows slightly open where you sleep for ventilation and air movement.
- . **DO NOT** sleep in vehicles with the engine running or use engine exhaust for heat.
- . **DO NOT** park vehicles near air intakes to tents, trailers, or environmental control units.

### Bore/gun gases.

- . Use onboard vehicle ventilation systems.
- . Keep bore evacuator well maintained.
- . Try to keep some air movement in gun emplacements or in protected batteries

### Solvents, greases, and oils.

- . Use .safety. Stoddard solvent.
- . Never substitute one solvent for a .better. one; for example, never use benzene or fuel in place of Stoddard.
- . Wear coveralls, if available, and rubber gloves.
- . Wash or change clothing often, especially when soiled by chemicals or fuel.
- . Always follow label instructions for use and safety precautions.
- . Use ventilation systems in areas where fumes are present or when conditions and materials dictate.

### Biological waste.

- . Always use disposable rubber gloves when working with biological materials.
- . Wear coveralls/rubberized aprons, as necessary.
- . Wear goggles or safety glasses, as necessary.
- . Wear facemasks and air-filtered breathing masks approved for specific tasks, as necessary, when removing/working with biological waste.
- . Dispose of biological waste materials according to unit SOPs and product label instructions.

Preventive medicine measures are simple, common sense actions that any service member can perform and every leader must know. The application of PMM can significantly reduce time loss due to DNBI.

***How Much Time Does Your Unit Spend Training Service Members on Disease and Nonbattle Injury Prevention?  
Combat Injury Prevention?***